

Title (en)

REDUCTION OF PRESSURE INDUCED TEMPERATURE INFLUENCE ON THE SPEED OF SOUND IN A GAS

Title (de)

VERRINGERUNG DER DRUCKINDUZIERTEN TEMPERATURAUSWIRKUNG AUF DIE SCHALLGESCHWINDIGKEIT IN EINEM GAS

Title (fr)

RÉDUCTION DE L'INFLUENCE DE LA TEMPÉRATURE INDUITE PAR LA PRESSION SUR LA VITESSE DU SON DANS UN GAZ

Publication

EP 3045905 A1 20160720 (EN)

Application

EP 16158050 A 20050617

Priority

- EP 16158050 A 20050617
- EP 10192214 A 20050617
- EP 05754574 A 20050617

Abstract (en)

A method of dimensioning a measurement apparatus for determining the proportion of gases in a gas mixture by means of ultrasound detection, comprising the steps of: determining a maximum allowable error in the determined proportion of a gas in the gas mixture; estimating the magnitude of maximum occurring pressure variation in the gas mixture; calculating the magnitude of maximum occurring temperature variation in the gas mixture dependent on the estimated magnitude of occurring pressure variation in the gas mixture; calculating a maximum allowable time lag for thermal exchange between the gas mixture and the measurement apparatus dependent on the maximum allowable error in the determined proportion of a gas in the gas mixture and the magnitude of occurring temperature variations in the gas mixture; providing a measurement chamber defined by a chamber defining structure having a cavity with space for gas in which ultrasound can propagate from an ultrasound transmitter to an ultrasound receiver providing an ultrasound sensor arrangement for sending an ultrasound pulse through the gas mixture in the measurement chamber; adapting the measurement apparatus by selecting a combination of shape, size and material of the chamber defining structure in relation to properties of the gas mixture such that the time lag for thermal exchange between the gas mixture and the measurement apparatus is less than or equal to the calculated maximum allowable time lag for thermal exchange.

IPC 8 full level

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Citation (applicant)

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DE

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